

Strand: Geometry and Spatial Sense

Grade: 6

School: Centennial Sr. and Sir William Gage

Lesson Goal	Diagnostic lesson to assess prior knowledge of transformational geometry concepts and skills
Curriculum Expectations	<ul style="list-style-type: none">- Identify, perform, and describe, through investigation using a variety of tools, rotations of 180° and clockwise and counterclockwise rotations of 90°, with the centre of rotation inside or outside the shape- Create and analyse designs made by reflecting, translating, and/or rotating a shape, or shapes, by 90° or 180°
Big Idea(s)	Shapes can be located in space and relocated by using mathematical processes

3 Part Lesson Plan		Materials
Getting Started (Minds On...)		
Instructional Grouping: Whole class <ul style="list-style-type: none">- Teacher draws a compass rose on the board. Students are told that they will be standing up and following the teacher's instructions.- Students all face the front of the class and are told to raise their right arm followed by their left arm.- They are then asked to face each of the four directions, as the teacher randomly names them, using the compass rose as a reference.- The teacher asks students to define clockwise and counterclockwise and draws the directions on the board.- Students are now asked to face the four directions while moving either CW or CCW.- Students are asked if they know what 90°, 180°, and 360° look like.- Students are now asked to rotate CW or CCW to these degrees.- Students are then asked to move in various directions, for example, 2 steps right and 3 steps forward, or 3 steps north and 1 step east.- Students go back to their seats and are asked if they can relate what they've just done to something in math (transformational geometry)- Teacher elicits from the class the terms slide, flip and turn as well as their mathematical terms: translation, reflection, and rotation. Both sets of terms are written on the board.		
Working On It (Action!)		
Instructional Grouping: pairs <ul style="list-style-type: none">- Students are given a grid paper worksheet with a triangle pre-drawn in the lower right of the paper (the triangle is a traced tangram piece or attribute block). There is a second triangle, in a different orientation from the first, drawn in the upper right of the grid paper. The triangles have their vertices marked A, B, C.- Students are given the instruction sheet (attached below this lesson plan).		<ul style="list-style-type: none">- Grid paper with pre-drawn triangles- Triangle tangram pieces or triangle attribute blocks- Pencil crayons
Reflecting and Connecting (Consolidate/Debrief)		
Debrief Strategy: Gallery Walk <ul style="list-style-type: none">- Students participated in a stay and stray gallery walk where one partner went to look at the work of the other students while the remaining partner explained their work to other students and answered any questions- After the stay and stray students were asked to share some highlights of what they saw		

- The teacher addressed misconceptions that arose during the activity	
Follow-up	
Students will give their step by step instructions to another group to see if they can replicate it on grid paper.	- Student instructions

Instruction sheet below ↓

Transformations

Step 1: Place the blue triangle on the triangle ABC on the bottom left of the grid paper.

Step 2: Look in the upper right hand corner of the grid paper and identify the location of the triangle drawn with dashes.

Step 3: Your goal is to move the blue triangle from ABC to the triangle drawn with dashes using rotations, reflections and translations.

Step 4: You must use a minimum of 5 translations, and a maximum of 8. **Minimum of one rotation, reflection and translation.**

Step 5: Trace each image in a different coloured pencil and label each image properly.

Step 6: Explain your transformations using step by step instructions.